BIPOLAR TRANSISTORS WITH LOW-RESISTANCE EMITTER CONTACTS

forming a polysilicon structure over an emitter region position of a semiconductive substrate, the substrate having a surface at the emitter region position, wherein forming the polysilicon structure on an emitter region position comprises: forming a diffusion barrier layer, wherein the diffusion barrier layer comprises at least one of the following: a silicon carbide, a silicon oxycarbide, and a titanium nitride; and

forming apolysilicon layer on the diffusion barrier layer; and cross-diffusing metal and at least a portion of the polysilicon structure to produce a metal emitter contact entirely above the surface of the substrate at the emitter region position.,

[The method of claim 33] A method of making a metal emitter contact for 34. (Amended) an emitter region position of a bipolar transistor, the method comprising:

forming a diffusion barrier layer over the emitter region position of a semiconductive substrate, wherein the diffusion barrier layer includes a dopant;

forming a polysilicon layer on the diffusion barrier layer and over the emitter region position; and

cross-diffusing metal and at least a portion of the polysilicon layer to produce the metal emitter contact, the metal emitter contact electrically coupled to the emitter region through the diffusion barrier layer; and [and the method further comprises] outdiffusing at least a portion of the dopant into the emitter region position.